

REMARKS/ARGUMENTS

Claims 1-22 remain in this application for further consideration. The claims have been amended as set forth above. No new matter has been added.

I. Objections to the Drawings

The Office Action objected to the drawings because of several informalities. In response, applicant submits corrected Figures 6 and 8-11, which are attached hereto in the appendix. In addition to the informalities identified in the Office Action, applicant has made other minor changes to the Figures to correct typographical errors. No new matter has been added. Accordingly, applicant believes that the drawings are in condition for allowance.

II. Objections to the Specification

The Office Action asserts that the title of the invention is not descriptive because it is unclear what is the meaning of the term "Daedalus". As set forth above, the title of the invention has been changed to "System and Method for Analyzing Data Accesses of a Trace from a Computer-Executable Program to Determine Data Access Patterns." Also, applicant has amended the specification to correct minor typographical errors. Accordingly, applicant believes that the concerns with the Specification have been met.

III. Objections to the Claims

The Office Action objected to claims 7 and 10 because of an informality. Specifically, the Office Action states that the word "and" should be added to the end of the limitation that

precedes the last limitation of the claim. Applicant has amended these claims so that this objection is traversed without further limiting the scope of the claims.

IV. Rejection of Claims 10 and 17-20 Under 35 U.S.C 112 and 35 U.S.C 101

In paragraph 7 of the Office Action, claim 10 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 10 was also rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Specifically, the Office Action states that it is unclear whether a computer-readable medium, computer executable instructions, a computer program or a process is claimed. Applicant has amended claim 10 as set forth above to meet the concerns under 35 U.S.C 112, second paragraph and 35 U.S.C. 101 without further limiting the scope of the claims.

The Office Action also rejected claims 17-20 under 35 U.S.C. 101. The Office Action propounds that the aforementioned claims are not limited to a practical application of an abstract idea that produces a useful, concrete, and tangible result. Claim 17 has been amended as set forth above and dependent claims 18-20 have been amended to properly depend from claim 17 without further limiting the scope of the claims. Claim 17 is modeled after the computer claims that were approved by the Court of Appeals for the Federal Circuit. *See In re Lowry*, 32 F.3d 1579 (Fed. Cir. 1994). Accordingly, applicant asserts that amended claims 17-20 meet the concerns under 35 U.S.C. 101.

V. Rejection of Claims 1 and 10 for Nonstatutory Double Patenting

In paragraphs 11-13 of the Office Action, claims 1 and 10 were rejected under the judicially created doctrine of obviousness-type double patenting. Claims 1 and 10 were rejected over claims 1, 3, 9 and 13 of U.S. Patent Application No. 09/735,027. Claim 1 was also rejected over claim 13 of U.S. Patent Application No. 09/939,162. Attached hereto in the appendix is a timely filed terminal disclaimer that complies with the Code of Federal Regulations. Accordingly, the double patenting rejections of claims 1 and 10 are obviated.

VI. Rejection of Claims 1-22 under 35 U.S.C. 102(b).

Claims 1-22 were rejected under 35 U.S.C. 102(b) as being anticipated by *Larus*, "Whole Program Paths," May 1999 (hereinafter "*Larus*"). Claim 1 is a method claim that specifically recites "using the identified sequences to create a modified trace file by removing less frequently occurring data access sequences from the trace file." (Emphasis added). This limitation is not taught or otherwise suggested by *Larus*. The Office Action purports that the "Introduction" and the "Overview" of *Larus* teaches this step. However, *Larus* does not teach any such step. *Larus* merely teaches that "[p]rogrammers have improved the performance of large, complex systems, such as operating systems and databases, by identifying heavily executed paths and streamlining them into 'fast paths'." (*Larus*, section 1, para. 2, lines 12-15). (Emphasis added). *Larus* also states that "[t]he second phase transforms the trace into a more compact and usable form by finding its inherent regularity (i.e., repeated code)." (*Larus*, section 1.1, para. 1, lines 2-4). (Emphasis added). These statements are general statements about the function of compression algorithms. One of the very purposes of a compression algorithm is to streamline or compact

regularities in code in order to make the computer more efficient. When *Larus* is read in its entirety, *Larus* makes evident that the streamlining takes place through a particular compression algorithm (SEQUITUR) that compacts the program code by finding repeated code (code that occurs frequently). (See *Larus*, section 3.2) However, the above stated statements do not indicate or otherwise suggest the removal of less frequently occurring data access sequences from the trace file. (Emphasis added). In fact, applicant cannot find any such teaching in any portion of the *Larus* document. Accordingly, *Larus* cannot possibly anticipate claim 1.

Regarding claims 2, 3, 5 and 6 of the present invention, applicant asserts that the limitations of those claims are not taught or otherwise suggested by the cited art. Furthermore, claims 2, 3, 5 and 6 ultimately depend from independent claim 1. Independent claim 1 is allowable as stated above. Accordingly, claims 2, 3, 5 and 6 are also allowable for at least those same reasons.

Specifically regarding claims 4, and 7-9 of the present invention, claim 4 depends from claim 1 and specifically recites the step of “using the identified data access sequences to update a stream flow graph that indicates how often each repetitively occurring data access pattern follows another repetitively occurring data access pattern.” Contrary to the argument set forth in the Office Action, Figure 2 of *Larus* does not teach updating a stream flow graph that indicates how often each repetitively occurring data access pattern follows another repetitively occurring data access pattern. (Emphasis added). *Larus* merely recites recording the execution frequency of a sequence of acyclic paths. (*Larus*, section 3.3, paragraph 5; figures 4-5). There is no

mention in the text of how often each repetitively occurring data access pattern follows another repetitively occurring data access pattern.

Claim 7 depends from claim 1 and further recites the step of “using the other sequences to create another trace by removing less frequently occurring data access sequences from the modified trace file.” (Emphasis added). The Office Action cites to Figures 1, 2 and 7 of *Larus* as teaching these steps. However, this simply is not the case. As more fully set forth above in support for claim 1.

Regarding claims 8 and 9, claim 8 recites that “the other trace is used to pre-fetch data” and claim 9 recites “the other trace is used in placing data in a cache.” *Larus* does not teach or otherwise suggest these limitations as the claims of the present invention recite. Furthermore, claims 4, and 7-9 ultimately depend from independent claim 1 and as such are thought to be allowable for at least the same reasons set forth above in support for claim 1.

Claim 10 of the present invention is an independent claim that recites in part “when the frequently occurring data access pattern follows another frequently occurring data access pattern, updating a data structure to reflect that the data access pattern follows the other data access pattern.” This limitation is similar to the limitation of claim 7. As reasoned above with relation to claim 7, *Larus* does not teach, show or otherwise suggest “updating a data structure” Accordingly, *Larus* cannot possibly anticipate claim 10.

Claims 11-16 ultimately depend from claim 10. Applicant asserts that the limitations of those claims are not taught in any manner by *Larus*. Specifically regarding claim 15 and 16,

claim 15 recites that the “stream flow graph is used to pre-fetch data into memory.” Claim 16 recites that the “data is pre-fetched depending on the probability of the data being requested based on a current data access request.” As stated above, *Larus* does not teach these limitations in any manner. Moreover, inasmuch as claims 11-16 ultimately depend from claim 10 the same are allowable for at least the reasons set forth above.

Claim 17 is an independent claim that specifically recites “a stream flow graph structured to store data that indicates a frequency that a data access sequence follows another data access sequence.” Claim 17 also recites “a pre-fetcher configured to use the data access information and the stream flow graph to fetch data elements into memory for use by the executing computer program.” As stated above, *Larus* does not teach these limitations. The Office Action’s contention that Figure 2 and Section 3.2 of *Larus* teaches these limitations is erroneous. Regarding claims 18-20 of the present invention, applicant asserts that the limitations of those claims are not taught in any manner by *Larus*. Furthermore, insofar as claims 18-20 ultimately depend from claim 17, the same are thought to be allowable for at least the same reasons set forth above.

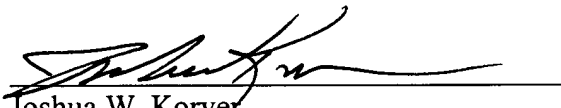
Claim 21 is an independent claim that recites “a database configured to store a stream flow graph.” Claim 21 also recites “a cache memory manager coupled to the stream flow graph database and the data access sequence database, wherein the cache memory manager is configured to arrange data elements of a repetitively accessed data stream in a cache using information from the two databases.” Claim 22 depends from claim 21 and recites that “the data elements of one repetitively accessed data stream are arranged in the cache to avoid a cache

conflict.” Applicant asserts that this language distinguishes the cited art for at least the same reasons set forth above. Accordingly, the 35 U.S.C. 102(b) rejection of claims 1-22 should be withdrawn.

In view of the foregoing amendments and remarks, all pending claims are believed to be allowable and the application is in condition for allowance. Therefore, a Notice of Allowance is respectfully requested. Should the Examiner have any further issues regarding this application, the Examiner is requested to contact the undersigned attorney for the applicant at the telephone number provided below.

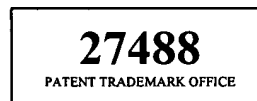
Respectfully submitted,

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Amendments to the Drawings:

The attached sheets of drawings include changes to Figures 6 and 8-11. These sheets, which include Figures 6 and 8-11, replace the original sheets 6 and 8-11.

Attachment: Replacement Sheets